

Technology for

Alaskan Transportation

Spring 1989 - Volume 11
Alaska Transportation Technology
Transfer Program

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Selecting a Consulting Engineer

In Alaska, many towns, cities and boroughs are too small to afford a large engineering staff. Yet, there are many highly competent engineering experts within the state who have an extensive knowledge of Alaskan environmental conditions and other unique Alaskan factors. By contracting with a consulting engineer for a specific project, a town or borough may economically take advantage of this expertise, especially for large and complex projects. Other states have similar problems and much of the following information comes from Selecting a Consulting Engineer: A Guide for Vermont Towns, provided by the Vermont Local Roads Program.

The majority of consulting contracts are with civil engineers. For most road or bridge projects, towns may be able to get the most inexpensive engineering service from the

Alaska Department of Transportation and Public Facilities. A call to the regional transportation office may also determine if a consultant's services are required.

Once a city decides that it needs the services of a consulting engineer it prepares a Request for Proposal (RFP). The RFP is an invitation to qualified firms to submit proposals for services. The RFP should clearly describe in simple language exactly what the city wants the engineer to do. It should include a section on the scope of the services required such as feasibility studies, project design and construction overview, and any special services that may be necessary.

Once the proposals are in, the agency should select a few of the best qualified firms based on their state qualifications and set up an interview
(continued on page 2)

Hard Hats

The subject of head protection has a rather interesting history. Safety hats as we know them have been around for some sixty years, but protective head gear is a lot older than that. Vikings made leather helmets and Roman soldiers used polished metal helmets for protection against blows of the enemy.

Protective head gear was forgotten for a few centuries until World War 1, when it reappeared as the doughboy hat. Somebody had finally figured out the helmet could take the flying debris a lot easier than a man's head. After the war, the same helmet was modified for industry and became the safety hat.

Safety hats, more commonly called hard hats, come in two models: (1) the

cap which has a bill on the front, and (2) the hat which has the full brim. The hat weighs 2 to 3 ounces more than the cap, but the balancing factor makes it impossible for a blindfolded person to tell the difference. What's more, the full brim offers better protection from the sun and rain.

Chin straps are available on contract to afford maximum protection. Think of the limited protection a football player would have without a chin strap on his helmet. Several injuries are reported each year wherein hard hats are knocked off and head injuries occur as a result. Remember, a hard hat can not protect you if it is not on your head.

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This newsletter is funded by a
grant from the Federal Highway
Administration.

Consulting Engineer
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with each firm. A checklist of areas to investigate for selecting a consulting engineer should include:

- 1) Specialized experience and technical competence of the firm and its personnel;
- 2) Demonstrated ability to develop economical engineering solutions;
- 3) Availability of personnel, equipment and facilities to complete the needed work within the time frame;
- 4) Individuals who will be assigned key project responsibilities and their qualifications, competence and past performance; and
- 5) Length of residence in the state and Alaskan experience.

Checking with past clients of the firm is a good idea. Speaking informally about the firm's quality of work, remaining within the budget, whether the work was done on time, the ease of the working relationship and whether the firm looked out for the agency's best interest can be very helpful. The cost of engineering services will vary based on the complexity of the project, services required and time frame. ♦

Hard Hats
(continued from page 1)

In addition to cushioning blows, such as from an angry grizzly, your hat can protect against electrical shock, chemical spills, or hot materials.

Care and Maintenance:

Periodically, check the shell for cracks and the suspension system for cracking, tearing, or fraying. Never paint, drill holes, or use solvents on your hard hat because they weaken the shell. As a general rule, the entire hat should be replaced every two years.

Don't Lose Your Head Over

False Objections:

Here are some answers to questions and comments most commonly heard.

"Why all the emphasis on hard hats?"

Remember, the brain is the control center of the body. The slightest damage to any part will cause a malfunction of some area of the body, either temporarily or permanently. The skull, under normal circumstances, protects the brain but when the possibility of brain damage from out-

side sources exists, additional protection is required.

"My hard hat is too hot in the summer."

Tests in the hot weather have shown that the temperature inside a hard hat is 12 degrees cooler than a baseball style cap. Your head is kept cool because of the ventilation provided by the air spaces between the shell and the suspension. The hat's surface reflects the heat too.

"My hard hat is too cold in the winter."

(Which is most of the year in Alaska)

Liners that come down over the ears are readily available for cold days. Hard hats must not be worn on top of everyday hats or parkas, and of course you must not remove the suspension.

"My hard hat is too heavy and strains my neck."

The weight of the hat should go unnoticed if the hat is worn properly and maintained. The average safety hat weighs about 13 ounces. Your head weighs about 13 pounds. That is one ounce of protection for every pound of head. It's a real bargain!

(continued on page 3)

News & Views



Coax a Smile From Motorists

Construction Zones Feature Smiley-faces

The Missouri Highway and Transportation Department is placing smiley-face signs within several highway construction zones around the state. At the beginning of the project, motorists will see a frowning-face sign. But as they continue through the project, the face will become successively happier until the end of the project where the sign features a broad grin.

Chief Engineer Wayne Muri says, "We're hoping they (the signs) will elicit motorists' understanding and patience with the construction, and at the same time, add a little humor to the drive through work zones."

One motorist responded: "Saw your adorable faces on Sunday, driving to church, on Highway 40. Yes,

you really have done something clever....made my day."

Adapted from *Better Roads Magazine*, September 1987. ♦

Night Driving

Did you know that a 65 year old person driving at night needs 4 times the light for good vision as he or she needed at age 39? Night vision requirements need careful consideration when designing highway markings, signs, and other safety features. The 65 and over age group is growing by half a million persons each year and the fastest growing age group in the country is 75 and over. One of the best night driving aids for all drivers and especially for older drivers is wider edgelines. Increasing edgelines from 4 inches to 8 inches received praise from drivers taking part in a study conducted for the American Association of Retired Persons. The volunteers also gave

high marks to reflectorized post delineators.

Adapted from *Better Roads*, December 1987. ♦

PCitis

Are you overwhelmed, intimidated, or otherwise susceptible to tremors when faced with digit to key combat with your personal computer? Fear not, help is available! There are courses regularly given in Fairbanks, Anchorage and Juneau to help you develop skills both in the basic IBM operating system, DOS, and Lotus 123. The T2 Program will be offering a short course, Introduction to Transportation Software, in December 1989. We urge any of you who are not already comfortable in using DOS and Lotus 123 to consider taking courses prior to December so that you can easily learn about the handy transportation computer software programs that are available.

Both the University of Alaska Southeast (UAS) and Microage offer introduction courses to DOS and

(continued on page 3)

Truck Tires Damage Road Surfaces

Alaskans are generally well aware that truck tires can damage road surfaces. They are reminded of this damage every year at breakup by road signs announcing "road limits". But you may not be aware of how increases in truck tire pressure reduce road lifespan.

Research results from the Texas Transportation Institute and the Department of Civil Engineering at Texas A & M University have shown that tires inflated to pressures as high as 125 psi damage road surfaces and may shorten expected life of some roads by more than 50%. The problem may get worse over time because tire manufacturers are now designing tires to be inflated between 140 and 150 psi.

The studies showed an increase in roadway surface strain of about 40% when tire pressure was raised from 75 to 125 psi. Unfortunately, that amount of tire pressure increase has been seen on several routes and in Alaska truck tires commonly use 85 to 90 psi.

Since most pavements are designed to a standard of 75 psi, calculations of life cycle determination have shown that surfaces require rehabilitation well before improvements were projected. Rural roads usually expected to have a service life of ten years could last only three to four years due to damage caused by such highly inflated truck tires. Damage is caused because the high pressure changes the tire's shape and shrinks its footprint. When the footprint is reduced, the weight of the truck and its cargo is compressed into a smaller area.

According to the research, highly inflated bias ply tires have a greater impact than highly inflated radial tires because bias ply tires have parallel ridges that transfer most of the dynamic force of the truck's weight to the pavement, placing a high degree of stress on the road surface.

Adapted from APWA Reported, July 1986. ◇

CONTEST!

The T2 Program is sponsoring a logo contest for our office. We would like you, our audience, to try your hand at designing a logo that we can use to identify your Alaska Transportation Technology Transfer Program. We are offering, as the prize for the winning entry, free tuition to the T2 training course of your choice during 1989 or 1990.

The logo will be used on our quarterly newsletter and flyers as well as the letterhead. Please help us develop an Alaskan logo that befits our own unique transportation systems. Entries should be clearly drawn and mailed by May 19th to: Logo Contest, Technology Transfer Program, 233 Duckering Building, Fairbanks, Alaska 99775-0660.

PCitis

(continued from page 2)

Lotus 123. UAS offers a one day course in Introduction to IBM PC and DOS for \$115.00 and a two day course in Lotus 123 for \$150.00. There are discounts available of 15% for 8 or more attendees from one organization and a 25% discount for 12 or more attendees. Contact Susan Doerflinger at 789-4478 for more information. Microage offers similar courses in Anchorage (522-1234), Fairbanks (456-3524), and Juneau (789-1400) with a half day course in DOS for \$95.00 and a full day course in Lotus 123 for \$195.00. Microage also offers up to a 50% discount for 4 or more attendees from one organization.

Good luck and we hope to see you in December at the Transportation Software course. ◇

Hard Hats

(continued from page 2)

When to Wear Hard Hats:

Check with your supervisor for the official rules for safety and protective clothing. As a general rule, always wear a hard hat when working:

- * on or adjacent to the travelled portion of the roadway (generally the right-of-way),
- * in the contractor's hard hat zones,
- * while operating heavy equipment,
- * where there is danger of head injury from impact, falling, or flying objects,
- * where there is danger of contact with a high voltage electrical source.

Adapted from Bulletin, Washington State Department of Transportation. ◇

Technology for Alaskan Transportation is a quarterly newsletter that informs local transportation people in government and industry of useful publications and services. The newsletter reports on practical information, new technology, and learning opportunities such as workshops, seminars and videotapes. To get on our mailing list, to receive any of our services, or to contribute to the newsletter, contact:

Transportation Technology
Transfer Program
Room 233 Duckering Building
Fairbanks, Alaska 99775-0660
(907)474-7733

About Our Program

The goal of the Alaska Transportation Technology Transfer Program is to help transportation agencies obtain useful information and training related to transportation needs. The program focuses on technology related to roads, bridges and public transportation. In addition to our newsletter, we provide low-cost seminars and workshops, provide copies of useful technical reports and videos upon request, and answer phone and mail inquiries related to transportation technology. If we don't have the answer, we will refer the question to a suitable specialist.

The Alaska Transportation Technology Transfer Program is administered by the Alaska Department of Transportation and Public Facilities with contract services provided by the University of Alaska Fairbanks, Institute of Northern Engineering. This program is funded by the Federal Highway Administration and the Alaska Department of Transportation and Public Facilities (DOT&PF).

The following people are involved in the program.

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Calendar of Events

We will be happy to include any relevant event you would like to publicize. For more information about events in Alaska, call Michael D. Travis at (907)474-2482, Larry Johnson at (907)474-7637, or Michelle Johnson at (907)474-7733.

1989

April 18-20: 10th Annual National Road and Street Maintenance Conference and Product Equipment Display. Las Vegas, Nevada. Contact Tim Lyon at (405)744-6049.

April 23-26: Engineering 21st Century Highways. San Francisco, CA. Contact ASCE at (212)705-7218.

* **May 1-5: Construction of Asphalt Concrete Pavements Course.** Egan Convention Center, Anchorage, AK. Contact T2 Office at (907)474-7733.

May 18-20: Engineering Surveying in 1989 - A Profession on the Move. Denver, CO. Contact ASCE at (212)705-7218.

June 5-9: Tri-Regional Safety/Traffic Operations Conference. Seattle, WA. Contact Neil Lacey at (907)586-7245.

* **June 8-9: Environmental Audit Course.** Anchorage, AK. Contact T2 Office at (907)474-7733.

July 10-14: Fifth World Conference on Transport Research: Yokohama, Japan. Write Professor Yukihide Ikano, Chairman of Scientific Committee, WCTR, c/o Association for Planning and Transportation Studies, 5th Floor, Language Service Building, Kioicho 3-33, Chiyodakyo, Tokyo 102, Japan.

July 12-14: Course 201, Communications in Real Estate Acquisition. Sponsored by the Arctic Trails Chapter 71, International Right-of-Way Association. Contact Sharon McLeod-Everette at (907)474-2414.

July 15: Course 213, Conflict Management. Sponsored by the Arctic Trails Chapter 71, International Right-of-Way Association. Contact Sharon McLeod-Everette at (907)474-2414.

July 24: How to Comply with Hazardous Work Management Regulations. Anchorage, Alaska. Presented by the Environmental Resource Center, Fayetteville, North Carolina. Contact Maryel Tomter at (919)822-1172.

* **August 7-8: Right-of-Way Forum.** University of Alaska Fairbanks. Contact T2 Office at (907)474-7733.

* **August (date to be announced): Traffic Control Devices Course.** Anchorage and Fairbanks (one day each). Contact T2 Office at (907)474-7733.

* **August (date to be announced): Design of Traffic Control Plan Course.** Anchorage and Fairbanks (one day each). Contact T2 Office at (907)474-7733.

* **T2 Short Courses**

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Transportation Technology Transfer Program
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Background

In May 1986, the Federal Highway Administration (FHWA) awarded a competitively bid contract to the University of Florida Transportation Research Center in Gainesville to establish the Center for Microcomputers in Transportation (McTrans Center). The objective of the McTrans Center is to "facilitate the exchange of information on uses of the microcomputer and associated software among transportation professionals."

The McTrans Center replaces three other microcomputer support centers that had been operated for several years by the Transportation Systems Center in Cambridge, Massachusetts. These three centers provided support and distribution of primarily safety, traffic engineering, and urban and statewide planning microcomputer software. A major goal of the new McTrans Center has been to expand into all areas of highway engineering and planning to address the needs of a broader segment of the transportation user community.

Among the many services provided by the McTrans Center are the publication of a quarterly newsletter, operation of a telephone hotline, and distribution of--and user support for--microcomputer software and documentation.

Newsletter and Hotline

McTrans currently has a mailing list of 12,000 names. The McTrans newsletter provides the chief means of communicating with the membership and keeping it up-to-date in new Center products and services.

The McTrans newsletter contains articles of general interest to microcomputer users as well as technical articles and helpful hints about specific highway engineering

programs. Included with the newsletter is the McTrans Product Catalog which contains brief descriptions of and ordering information for software offered by McTrans. Quarterly catalog supplements announce new products; a complete updated catalog is distributed to all members every year.

The McTrans telephone hotline provides quick and easy access to the Center for information about it and the software it distributes. Most questions are answered immediately; if necessary, the McTrans staff will research the question and return the call. The telephone hotline number is (904)392-0378.

Software Distribution

McTrans currently distributes over 150 different products, including programs in traffic engineering, urban planning, culvert analysis, construction and project management, pavement design and management, and many other aspects of highway planning, design, and construction.

Examples of the wide range of programs available from McTrans include:

- * The Highway Capacity Software (HCS) - this is a faithful implementation of the procedures in the 1985 *Highway Capacity Manual*.
- * The Culvert Analysis Software (HY-8) - this automates the methods described in the FHWA report *"Hydraulic Design of Highway Culverts."*
- * The Pavement Management System (PMS) - this program is used in determining the condition of flexible pavements and in helping the user formulate decisions on the type of reconstruction or rehabilitation required.

A new product available from McTrans is GTRAF, which provides both animated and static graphics to help users interpret the results of the NETSIM microscopic traffic simulation model. GTRAF and most of the other program available from McTrans run on the IBM PC and compatible microcomputers.

In its first year, McTrans distributed only public domain software which developers contributed to the Center so that it could be shared with others. Public domain programs are contributed to McTrans both by the Federal Highway Administration, and by individuals and State and local transportation agencies across the country.

For member convenience in accessing a wider selection of highway engineering programs, the McTrans Center also lists proprietary software in its product catalog. Depending on the developer's preference, McTrans either distributes in the program directly or refers the potential customer to the appropriate source. In either case, the McTrans Center collects a commission on the sale.

Another significant area of McTrans expansion is the listing of foreign-developed highway engineering software. Through an arrangement with MVA Systematica in Great Britain, McTrans lists MVA's software in its product catalog. MVA Systematica is the developer of many well known transportation planning packages; it also distributes traffic engineering software developed by the Transport and Road Research Laboratory in the United Kingdom. Customers in the United States can order these products through McTrans in U.S. dollars, and the Center forwards the order to MVA for processing.

McTrans Levels of Support

Besides serving as a clearinghouse for distributing microcomputer software, McTrans also provides seven separate levels of support (LOS) to users for the programs it distributes. When a package is contributed to the McTrans Center, its LOS is determined jointly by McTrans and the donor. Factors such as the anticipated number of users, the complexity of the software, the amount of testing it has undergone, and the contributor's willingness to share in the support are all considered in determining the appropriate LOS. A surcharge is added to the software's price to fund any support to be provided by McTrans.

LOS 1: Full Technical and Maintenance Support. At this level, the McTrans Center provides technical assistance to software users and maintains the program code. The software is distributed with a registration card which users return to the McTrans Center. Registered users receive program "notes", as needed, advising them of potential problems and the corrective actions to be taken. When "bugs" are discovered in the software, McTrans corrects the problem and provides free updates of the disks and documentation. If enhancements are made to the software to improve its operation, the McTrans Center will distribute a new release to registered users.

The registration period lasts for a year; users must then reregister the software to continue to receive LOS 1 support.

LOS 2: Technical and Upgrade Support. As with LOS 1 software, purchasers of LOS 2 software are registered for a year, and the McTrans Center provides them with technical assistance in program use. The Center also maintains records of bugs and suggested en-

hancements and forwards this information to the software developer. The developer, in turn, is responsible for providing the needed software maintenance and for furnishing updates and corrections to McTrans. The McTrans Center then distributes free updates to registered software users.

LOS 3: Limited Technical Support. Purchasers of LOS 3 software are not registered and receive only limited technical support from McTrans. Any bugs in the software are reported to the developer; however, the developer is not obligated to provide corrections to the code. Although these programs do not receive the support and maintenance provided at higher levels, LOS 3 software is generally well tested and reliable.

LOS 4: User Supported Freeware/Shareware. LOS 4 software is copyrighted by the developer and distributed by McTrans as a user service. Purchasers of shareware are often invited to send the developer a voluntary contribution if they find the software useful. McTrans encourages the shareware concept, but provides no support for this software.

LOS 5: Totally Unsupported. LOS 5 users are "on their own". The software is useful and, based on past experience, fully operational.

LOS 6 and LOS 7: The last two levels of support apply to proprietary software. Software designated as LOS 6 is proprietary software that McTrans supports through "first line" technical assistance when users need help. The developer corrects any bugs that are discovered; McTrans distributes free updates for some specified period of time after purchase. At LOS 7, all technical support and maintenance are provided by the developer.

Funding

The contract for the McTrans Center was awarded with the understanding that FHWA would provide funding support for the Center's establishment, but that McTrans would become completely user-supported by May 1989.

Currently, the minimum price for unsupported software is \$10 per disk with a surcharge added for each higher level of support. The price for documentation is generally 6 cents per page with a minimum charge of \$5. Certain documents are higher.

The continued financial success of the McTrans Center is expected to come from an expanded product base and by increasing the number of members on the mailing list. New products are being introduced, including videotapes on software use, training seminars, and so on. To facilitate customer purchases, McTrans now accepts charge cards and blanket purchase orders. This allows users to place orders as needed by telephone, rather than mailing in a check or issuing a one-time purchase order for payment.

If you have a useful software package - either public domain or proprietary - that you would like to distribute through McTrans, contact the Center staff to discuss distribution arrangements. For more information about the McTrans Center or to add your name to the Center's mailing list, contact:

**The McTrans Center
University of Florida
512 Weil Hall
Gainesville, Florida 32611
(904)392-0378**

Adapted from an article written by Antoinette D. Wilbur, transportation specialist for FHWA, that appeared in the September 1988 Public Roads, Vol. 52, No. 2. ♦

For More Information

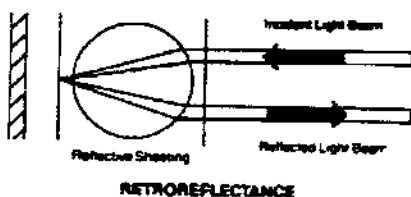
For back issues of our newsletters and notes, or to get on our mailing list, write: Publications, Transportation Technology Transfer Program, University of Alaska Fairbanks, Fairbanks, AK 99775-1760. For more information, you can also call (907) 474-7733.

Motorists around the world depend upon traffic control devices that are easy to see and recognize to guide them safely along streets and roads. This is especially important during dangerous nighttime hours, which include much of our Alaskan winters. For that reason traffic engineering professionals continuously research the application of retroreflective materials for use in traffic control devices.

What Do We Mean By Retroreflective?

Reflectivity occurs when light waves strike an object and "bounce" from it. The brightness of the reflected light depends on the intensity of the light striking the object and the materials from which the object is made. Specific surfaces cause specific kinds of reflection.

In "retroreflection," the surface returns the reflected light directly to its source. For this reason, the light appears brightest to observers closest to the light source. An example is a driver and his own headlights. Because he is close to the source of the light, he sees more light reflected back to him. This makes retroreflective surfaces excellent for night driving visibility.



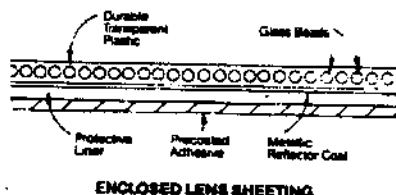
How Does Retroreflectivity Improve Traffic Control Materials?

Reflective materials use tiny glass beads to reflect light. Each bead refracts (bends) the incoming light beam as it passes through the front surface of the bead. The light reflects

off the back surface of the bead and is again refracted back through the front surface and returns to its source.

Research into reflective beads and their placement into durable binding systems has produced a variety of reflective sheetings and pavement tapes which return more light to the driver.

An even greater challenge has been to insure that these reflective materials continue to retain a high degree of reflectance throughout their performance life on the roadway. The result is safer nighttime driving. Continuing research into the natural phenomenon of retroreflectivity has produced a wide variety of high performance reflective sheetings and pavement marking tapes which are highly visible at wide angles to drivers at night.

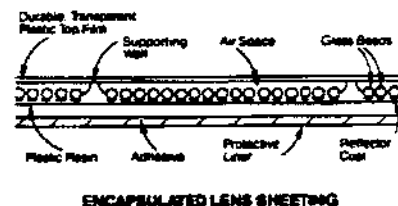


Reflective Signs Meet Motorists Needs

In engineer grade sheeting, glass beads are enclosed "within" a durable transparent plastic, which provides a smooth surface. The result is a sheeting which retains its reflectance even when wet, can easily be cleaned, and provides a true day/night color to the sign.

Super or premium engineer sheeting has over twice the retroreflectivity of engineer grade sheeting. Superior glass bead gradation and quality control are the reasons for the improved performance. They also account for the increased cost (approximately 2.5 times engineer grade).

High intensity sheeting uses the technique of "encapsulation" to protect the glass beads. The top film, instead of resting on the beads, is supported by walls constructed in a unique hexagonal, or "honeycomb" pattern. This allows air to come between the beads and the top film. And it is this construction that accounts for the dramatically higher brightness and wide viewing angle of the sheeting. High intensity sheeting is over 3.5 times as retroreflective as



engineer grade sheeting. One manufacturer (3M) guarantees it will retain at least 80 percent of its original specified reflectance after ten years of use on a traffic sign. However, it also costs almost 4 times as much as engineer grade.

Choosing Your Reflective Material

Although states routinely use high intensity sheeting for critical signs (stop, yield, etc.) the best choice of retroreflective material varies with such factors as cost (both material and labor for installation), intended use (signs, vehicles, construction barriers), viewing conditions, and other pertinent factors. At least one study has indicated that signs of premium engineer grade sheeting are more readable than high intensity sheeting. The expected lifetime of a sign can affect the choice. For example, if a sign is likely to be damaged by gunfire, the longevity of the retroreflective material may not be a concern. Finally, the viewing audience may re-

quire higher reflectivity (See Night Driving in News and Views).

Unfortunately, there is no single answer as to which type of retroreflective material should always be used. To learn more about retroreflective options, we encourage you to consult

the FHWA report, "Retroreflectivity of Roadway Signs for Adequate Visibility: A Guide" available from the Alaska T2 Program. This report includes sections on sign fabrication; handling, stockpiling and installation;

inventory, inspection and replacement; and sign maintenance.

Adapted from "The Bridge", Michigan Technical University; "Crossroads", University of Wisconsin-Madison; and Washington State Department of Transportation. ♦

For More Information

For back issues of our newsletters and notes, or to get on our mailing list, write: Publications, Transportation Technology Transfer Program, University of Alaska Fairbanks, Fairbanks, AK 99775-1760. For more information, you can also call (907) 474-7733.

Place a check by the publication you wish to receive.

Last = 407

- ☐ Absenteeism and Turnover, ID-385, June 1982, The Business Roundtable.
- ☐ Administration and Enforcement of Building Codes and Regulations, ID-392, October 1982, The Business Roundtable.
- ☐ Asphalt Seal Coats, ID-407, November 1987, Washington DOT.
- ☐ Constraints Imposed by Collective Bargaining Agreements, ID-383, September 1982, The Business Roundtable.
- ☐ Construction Labor Motivation, ID-394, August 1982, The Business Roundtable.
- ☐ Construction Technology Needs and Priorities, ID-403, August 1982, The Business Roundtable.
- ☐ Construction Training Through Vocational Education, ID-389, August 1982, The Business Roundtable.
- ☐ Contractor Supervision in Unionized Construction, ID-406, February 1982, The Business Roundtable.
- ☐ Contractual Arrangements, ID-400, October 1982, The Business Roundtable.
- ☐ Cost Effective Bridge Maintenance Strategies - Vol. 11 Guidelines and Recommendations, ID-368, June 1986, FHWA.
- ☐ Exclusive Jurisdiction in Construction, ID-404, July 1982, The Business Roundtable.
- ☐ First and Second Level Supervisory Training, ID-397, May 1982, The Business Roundtable.
- ☐ Government Limitations on Training Innovations, ID-388, March 1982 reprinted 1985, The Business Roundtable.
- ☐ The Graying of America, ID-376, FHWA, November 9, 1987.
- ☐ Guidelines Manual for Minimizing Water Quality Impacts from Highway Maintenance Practices - Volume IV, ID-367, March 1985, FHWA.
- ☐ Gulderall II, ID-381, New York DOT, January 1984.
- ☐ Handbook for a Transportation Management Review, ID-377, October 1986, USDOT.
- ☐ Highways: Why Do They Wear Out? Who Pays for Their Upkeep?, ID-369, AASHTO.
- ☐ The Idaho Rural/Small City Cooperative Transportation Marketing Demonstration Project, ID-372, October 1986, UMTA.
- ☐ The Impact of Local Union Politics, ID-386, June 1982, The Business Roundtable.
- ☐ Improving Construction Safety Performance, ID-396, January 1982, The Business Roundtable.
- ☐ Integrating Construction Resources and Technology Into Engineering, ID-401, August 1982, The Business Roundtable.
- ☐ Labor Supply Information, ID-391, April 1982, The Business Roundtable.
- ☐ Lime Slurry Pressure Injection Bulletin, ID-382, National Lime Assoc., Bulletin 331.
- ☐ Local Labor Practices, ID-384, April 1982, The Business Roundtable.
- ☐ Long-Term Evaluation of the Acoustic Emission Weld Monitor: Final Report, ID-375, February 1988, FHWA.

- ___ **Management Education and Academic Relations**, ID-398, June 1982, The Business Roundtable.
- ___ **Measuring Productivity in Construction**, ID-395, September 1982, The Business Roundtable.
- ___ **Modern Management Systems**, ID-399, November 1982, The Business Roundtable.
- ___ **More Construction for the Money**, ID-393, January 1983, The Business Roundtable.
- ___ **Protection of Pipelines Through Highway Roadbeds**, ID-378, TRB, July 1988.
- ___ **Research and Development Program for Highway Construction Engineering Management: Executive Summary and Final Report**, ID-380, May 1979, FHWA.
- ___ **Safety Cost Effectiveness of Incremental Changes in Cross-Section Design: Informational Guide**, ID-366, December 1987, FHWA.
- ___ **Scheduled Overtime Effect on Construction Projects**, ID-405, November 1980, The Business Roundtable.
- ___ **Small Transit System Management Handbook**, ID-371, December 1985, USDOT.
- ___ **Specification Guide for Small Transit Vehicles**, ID-370, February 1984, USDOT.
- ___ **Subjourney in Union Construction**, ID-387, February 1982, The Business Roundtable.
- ___ **Technological Progress in the Construction Industry**, ID-402, July 1982, The Business Roundtable.
- ___ **Traffic Detector Handbook: Field Manual for Inductive Loop Detectors, Magnetometers, Magnetic Detectors**, ID-373, April 1985, FHWA.
- ___ **Traffic Detector Handbook**, ID-374, April 1985, FHWA.
- ___ **Training Problems in Open Shop Construction**, ID-390, September 1982, The Business Roundtable.
- ___ **User's Guide for Removal of Not Needed Traffic Signals**, ID-379, November 1980, FHWA.

If you would like to obtain a copy of the above publications, please write to the address below or call Michelle Johnson at (907)474-7733. These publications are available on a loan basis, however, some are available to keep.

Alaska Transportation Technology Transfer Program
233 Duckering Building
Fairbanks, Alaska 99775-0660

Name: _____ Title: _____

Organization: _____

Department: _____

Address: _____

City: _____ State: _____ Zip: _____ Phone: _____

For More Information

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Place a check by the videotape you wish to receive.

LAST = 90

___ **Asphalt Pavement Applications**, ID-1, Transportation Information Exchange, 35 min. Discussion centers on the surface applications of fog seals and chip seals. It covers basic design factors affecting seal coats, and details hot-mix application for overlay work.

___ **Asphalt Plant Pavement Inspection**, ID-2, Utah DOT, 29 min. This tape covers the inspection of dryer drum and batch plants, and the on site inspection of paving operations.

___ **Base and Subbase Repair**, ID-3, FHWA/IRF, 16:04

___ **Cleaning and Clearing of Bridges**, ID-9, FHWA/IRF 14 min. Covers the proper cleaning and clearing of bridges, including equipment needed and procedures to follow.

___ **Cold In-Place Recycling**, ID-11, Oregon DOT, 1986, 40 min. This tape contains information on the process of cold in-place recycling, cost savings, possible locations, and present research.

___ **Common Maintenance Problems and Causes**, ID-85, FHWA/IRF, 20:37

___ **Concrete Bridge Deck Repair**, ID-12, FHWA/IRF, 18 min. This tape focuses on the permanent repair of partial and full depth holes in concrete bridge decks, including equipment needed and procedures to follow.

___ **Crack Repair in Asphalt Pavement**, ID-86, FHWA/IRF, 11:48

___ **Equipment Operation Demo**, ID-18, Utah DOT, 10 min. An introduction to the Utah DOT's series of training tapes that discuss the operation and maintenance of various types of heavy equipment.

___ **Field Testing - Concrete**, ID-19, 3 parts, 34 min. This tape describes the procedures used when testing concrete in the field. Part I covers preparations and random sampling, part II covers slump tests and the casting of cylinders, and part III covers air entrainment testing.

___ **The Flagger**, ID-20, Washington State Dot, 43 min. This is a simple instructional tape on flagging that covers qualities of an ideal flagger, attire, equipment, station, using the stop/slow sign and hand signals, advance warning signs, and some actual situations.

___ **The Flagman**, ID-21, Utah DOT, 23:45 min. This tape covers characteristics that make the "ideal" flagman, including traits and equipment.

___ **Guardrail Maintenance**, ID-22, Utah DOT, 15 min. This tape covers procedures for repairing typical sections, turned down end sections, and bridge connections for the maintenance worker.

___ **Hardwood Anyone?**, ID-89, December 16, 1988, 9:40.

___ **Introduction to Asphalt Materials**, ID-28, The Asphalt Institute, 30 min. Training tape explains the basic types of asphalts, ways to liquefy asphalts, and the various types of asphalt emulsions and why they are used.

___ **Keyed RipRap**, ID-29, FHWA, 12 min.

___ **Lime - The Versatile Stabilizer in Construction**, ID-30, National Lime Association, 26 min. This video introduces the use of lime in soil stabilization by illustrating several successful construction projects.

___ **Liquid Limit and P.L.**, SEE ID-65, South Dakota DOT,

___ **Maintain Non-Hard Surfaces**, ID-34, Utah DOT, 9 min. Covers procedures for maintaining non-hard road surfaces with a motorgrader.

___ **Maintenance Management and Equipment Management**, ID-35, M2, each part 30 min. long.

Alaskan Transportation Technology Transfer Program

Notes on Publications and Videos

___ **Maintenance Management System**, ID-36, FHWA, 35 min. A supplement to the FHWA Maintenance Management System Course that describes procedures for effective management of maintenance activities.

___ **Patching Unpaved Roads**, ID-46, FHWA, 11:25.

___ **Patching with Hand Tools**, ID-47, Utah DOT, 12 min. This video illustrates the correct procedures for patching asphalt pavements with hand tools.

___ **Pothole Repair in Asphalt Concrete Pavement** ID-57, FHWA/IRF, 13:15

___ **Pothole Repair in Surface Treatment Pavement**, ID-58, FHWA/IRF, 13:28

___ **Potholes: Causes, Cures and Preventions**, ID-59, CRREL, 17 min. Presents the basic causes, cures, and prevention of potholes. Repair procedures are defined including 12 steps for resolving the pothole problem.

___ **Repair of Depressions, Rutting, and Corrugations**, ID-87, FHWA/IRF, 13:42

___ **Sealing Cracks**, ID-83, UTAH DOT, 8 min.

___ **Smoothing and Reshaping of Earth and Gravel Roads**, ID-66, FHWA/IRF, 1985, 21 min. This tape covers the equipment needed and procedures to follow when smoothing or reshaping gravel roads with a grader.

___ **Subsurface Changed Condition**, ID-88, April 9, 1986 FHWA Seminar, Jim Zotter, FHWA Attorney.

___ **Testing Series II**, ID-71, South Dakota DOT, 1 hr 32 min. A man demonstrates various soil and concrete tests. Part I covers soil moisture testing with the speedy and alcohol methods, Part II covers density testing with sand cones and water balloons, and Part III covers air meter calibration, unit weight, air content, slump and cylinder casting for concrete.

___ **Timber Bridges**, ID-72, FHWA, 4/88, 21 min. This tape discusses the cost effectiveness of modern stressed timber bridges, as covered in the May '87 timber bridge conference.

___ **Traffic Signal Systems - Go For the Green**, ID-77, FHWA, 33 min.

___ **Truck Impacts on Pavements**, ID-78, FHWA, 37 min. This video introduces the use of truck data in pavement design and discusses the effect truck traffic has on pavements.

___ **Upgrading Gravel Roads**, ID-79, Montana State University RTAP, 20 min. 2 parts - The first part explains the importance of gravel roads in rural areas, and highlights problems such as poor materials, narrow rights-of-way, decreasing budgets, and lack of equipment. The second part of the tape shows how MT/DOT used a near-site plant mixer to add asphalt and water to sand and gravel in order to create a good base.

We ordinarily loan our videos on a two week basis. If you have any questions or requests, please contact Michelle Johnson at (907)474-7733 or print your name and address below and mail to:

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